FIG. 1

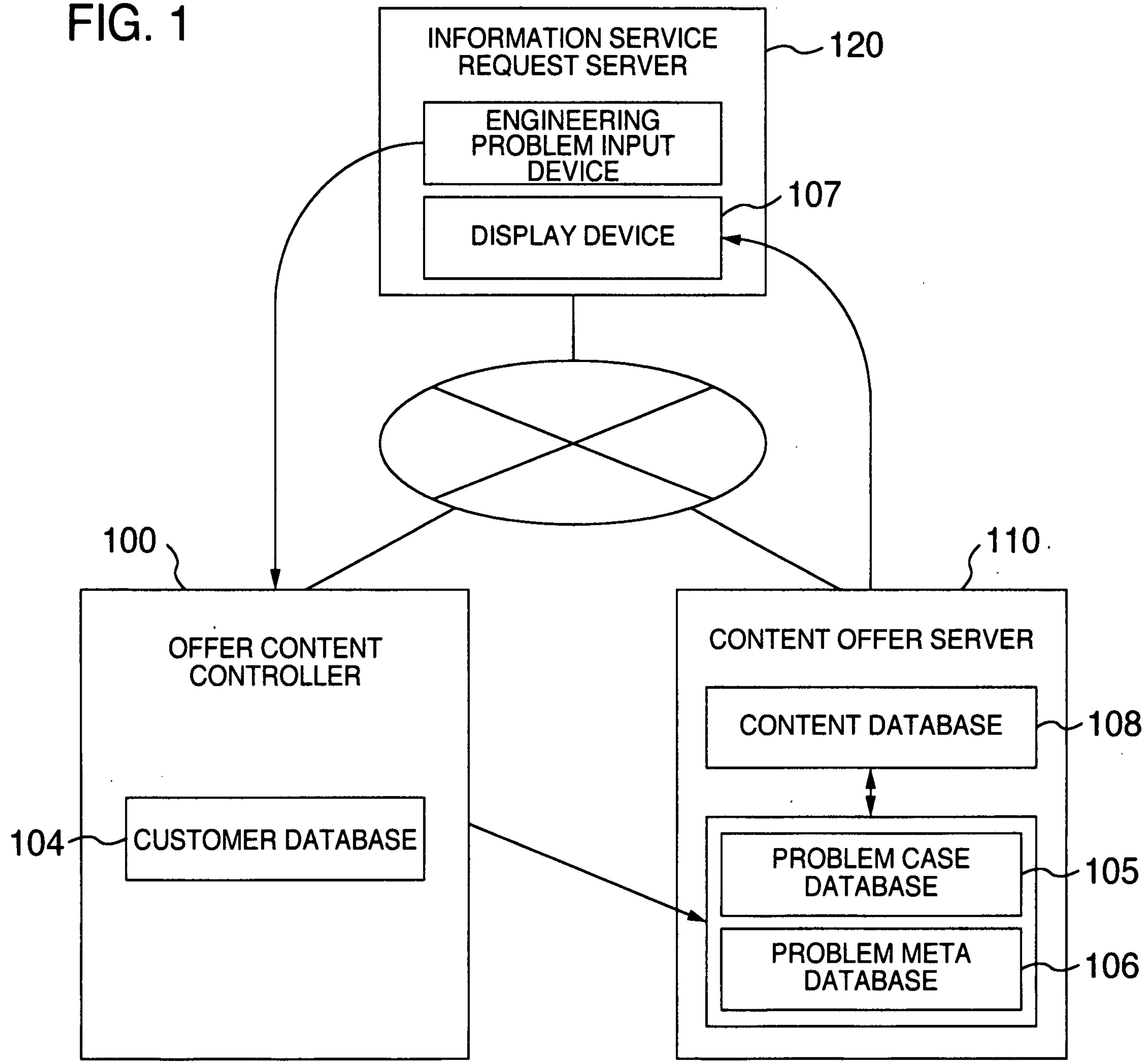

INFORMATION SERVICE REQUEST SERVER
120
ENGINEERING PROBLEM INPUT DEVICE
DISPLAY DEVICE
107
100
OFFER CONTENT CONTROLLER
CUSTOMER DATABASE
104
110
CONTENT OFFER SERVER
CONTENT DATABASE
108
PROBLEM CASE DATABASE
105
PROBLEM META DATABASE
106

FIG. 2

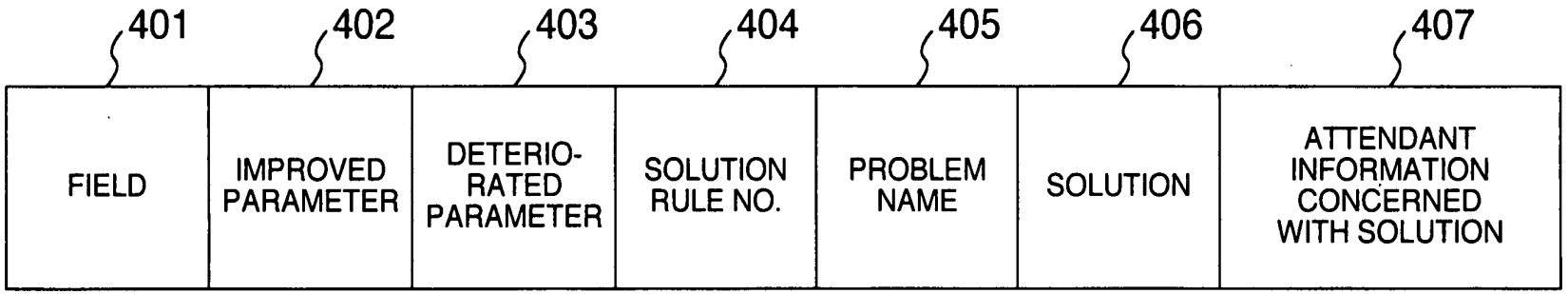


FIG. 3

140 130

IMPROVED PARAMETER \ DETERIORATED PARAMETER	1 WEIGHT OF MOVING OBJECT	2 WEIGHT OF STILL OBJECT	3 LENGTH OF MOVING OBJECT	4 LENGTH OF STILL OBJECT	5 AREA OF MOVING OBJECT	6 AREA OF STILL OBJECT	7 VOLUME OF MOVING OBJECT	8 VOLUME OF STILL OBJECT	9 VELOC
1 WEIGHT OF MOVING OBJECT		-	15,08,29,34	-	29,17,38,34	-	29,02,40,28	-	02,08,15
2 WEIGHT OF STILL OBJECT	-		-	10,01,29,35	-	35,30,13,02	-	05,35,14,02	-
3 LENGTH OF MOVING OBJECT	15,08,29,34	-		-	15,17,04	-	07,17,04,35	-	13,04
4 LENGTH OF STILL OBJECT	-	38,28,40,29	-		-	17,07,10,40	-	35,08,02,14	-
5 AREA OF MOVING OBJECT	02,17,29,04	-	14,15,18,04	-		-	07,14,17,04	-	29,30,
6 AREA OF STILL OBJECT	-	30,02,14,18	-	26,07,09,39	-		-	-	-
7 VOLUME OF MOVING OBJECT	02,25,29,40	-	01,07,35,04	-	10,07,04,17	-		-	26,04,3
8 VOLUME OF STILL OBJECT	-	35,10,19,14	19,14	35,08,02,14	-	-	-		-
9 VELOCITY	02,28,13,38	-	13,14,08	-	29,30,34	-	07,29,34	-	
10 FORCE	08,01,37,18	18,13,01,28	17,19,09,36	28,01	19,10,15	01,18,36,37	15,09,12,37	02,36,18,37	13,28,15
11 STRESS PRESSURE	10,36,37,40	13,29,10,18	35,10,36	35,01,14,16	10,15,36,28	10,15,36,37	06,35,10	35,34	06,35,34
12 SHAPE	08,10,29,04	15,10,26,03	29,34,05,04	13,14,10,07	06,34,04,10	-	14,04,15,22	07,02,35	35,15,34
13 STABILITY OF STRUCTURE OF SUBSTANCE OBJECT	21,35,02,39	26,39,01,40	13,15,01,28	37	02,11,13	39	28,10,19,39	34,28,35,40	33,15,28
14 STRENGTH	01,08,40,15	40,26,27,01	-	15,14,28,26	03,34,40,29	09,40,28	10,15,14,07	09,14,17,15	08,13,26
15 DURATION OF ACTION OF MOVING OBJECT	18,05,34,31	-	02,19,09	-	03,17,19	-	10,02,19,30	-	03,35,
16 DURATION OF ACTION OF STILL OBJECT	-	06,27,19,16	-	01,40,35	-	-	35,34,38	-	-
17 TEMPERATURE	36,22,06,38	22,35,32		15,19,09	03,35,39,18	35,38	34,39,40,18	35,06,04	02,28,
18 LUMINANCE BRIGHTNESS						-	02,13,10		10,1

FIG. 4

NO.	TYPES OF RULES	NO.	TYPES OF RULES
1	RULE OF DIVISION	21	RULE OF SUPER FAST EXECUTION
2	RULE OF REMOVAL / EXTRACTION	22	RULE OF GOOD COMING OUT OF EVIL
3	RULE OF LOCAL QUALITY	23	RULE OF FEEDBACK
4	RULE OF ASYMMETRY	24	RULE OF INTERMEDIACY
5	RULE OF JOINING	25	RULE OF SELF SERVICE
6	RULE OF VERSATILITY	26	RULE OF COPY
7	RULE OF NESTING	27	RULE OF MERIT OF USING INEXPENSIVE SHORT LIFE RATHER THAN EXPENSIVE LONG LIFE
8	RULE OF BALANCE	28	RULE OF REPLACEMENT OF MECHANICAL SYSTEM
9	RULE OF PREOCCUPATION COUNTERACTANT	29	RULE OF AIR PRESSURE AND LIQUID PRESSURE
10	RULE OF PREOCCUPATION ACTION	30	RULE OF USING THIN FILM
11	RULE OF PROTECTION IN ADVANCE	31	RULE OF USING POROUS MATERIAL
12	RULE OF EQUIPOTENTIAL	32	RULE OF USING DISCOLORATION
13	RULE OF REVERSE ASSOCIATION	33	RULE OF HOMOGENEITY
14	RULE OF CURVED LINE / CURVED SURFACE	34	RULE OF REJECTION / REPRODUCTION OF COMPONENT
15	RULE OF DYNAMIC PROPERTY	35	RULE OF CHANGING CONDENSED CONDITION
16	RULE OF ABOUT	36	RULE OF PHASE CHANGE
17	RULE OF TRANSITION TO OTHER DIMENSION	37	RULE OF THERMAL EXPANSION
18	RULE OF USE OF MECHANICAL VIBRATION	38	RULE OF USING HIGHLY CONCENTRATED OXYGEN
19	RULE OF PERIODIC ACTION	39	RULE OF USE OF INACTIVE ATMOSPHERE
20	RULE OF CONTINUING USEFUL EFFECT	40	RULE OF USING COMPOSITE MATERIAL

FIG. 5

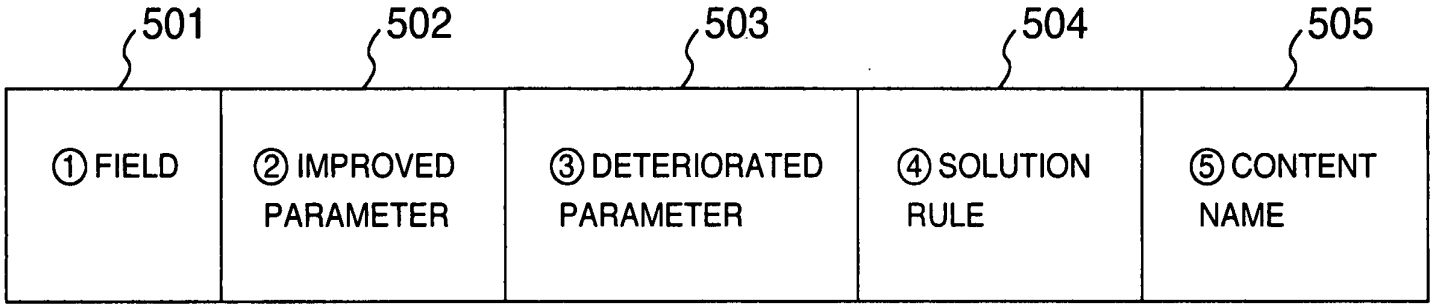


FIG. 6

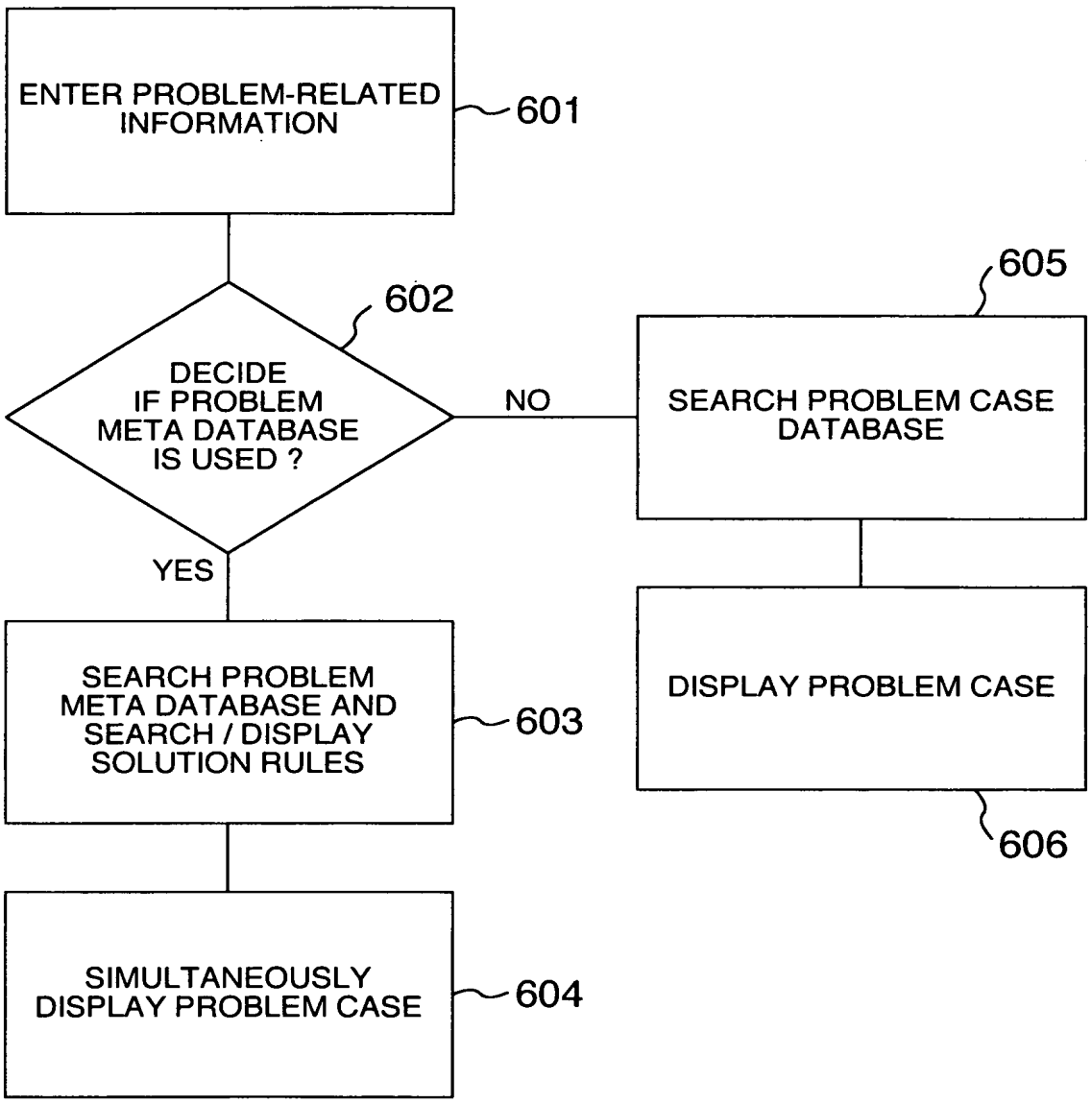


FIG. 7

IMPROVED PARAMETER:
LENGTH OF MOVING OBJECT
DETERIORATED PARAMETER:
VOLUME OF MOVING OBJECT

RULE:
NO.7 RULE OF NESTING
NO. 17 RULE OF TRANSITION TO OTHER DIMENSION
NO.4 RULE OF ASYMMETRY
NO.35 RULE OF PARAMETER CHANGE

NO.	EXAMPLES OF SOLUTION	RULE NO.
1	MAKE FESCUE NESTED	7
2	MAKE FESCUE OPTICAL POINTER	17
3	•	•
4	•	•
5	•	•
6	•	•
7	•	•
8	•	•
9	•	•

FIG. 8

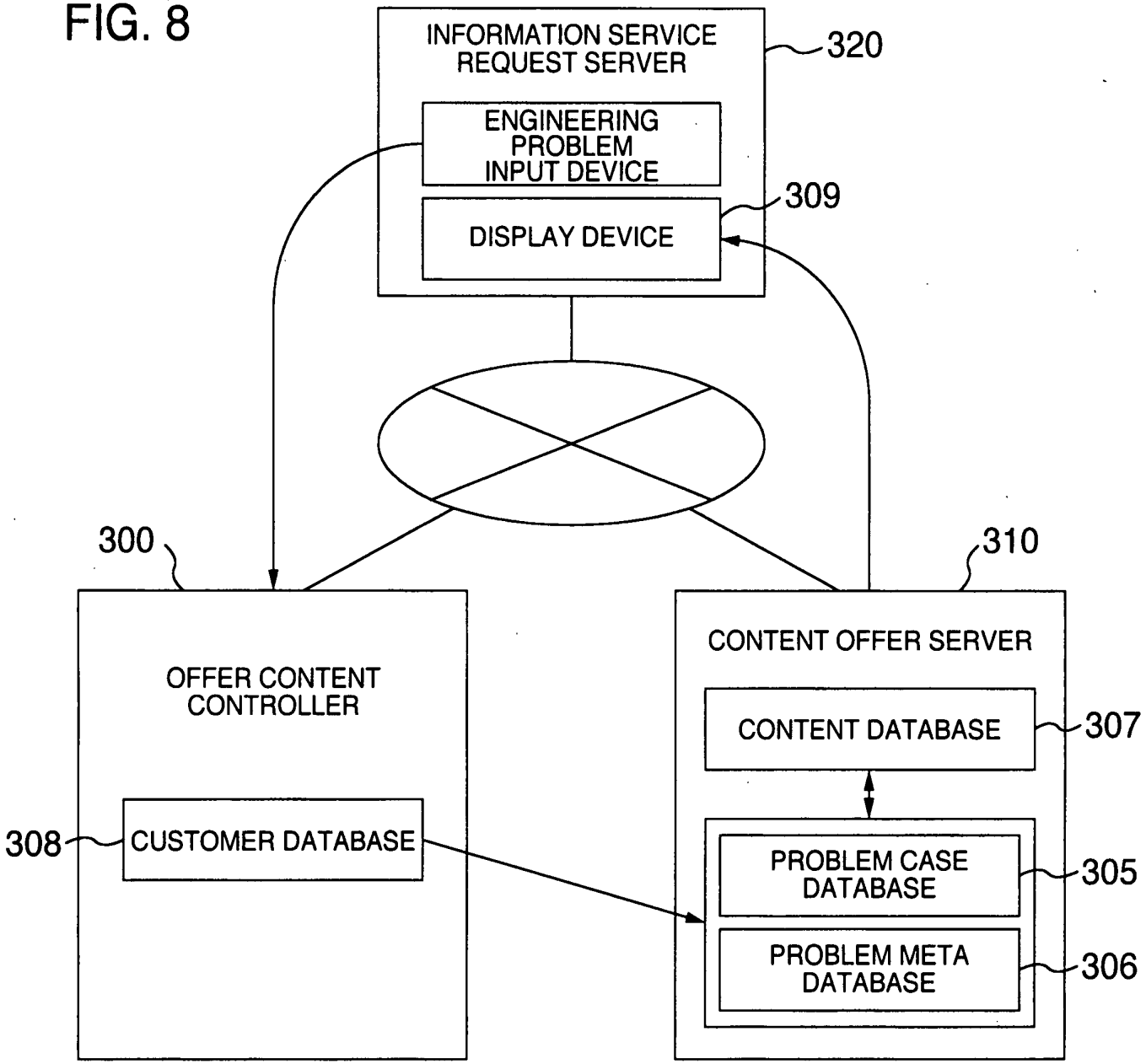


FIG. 9

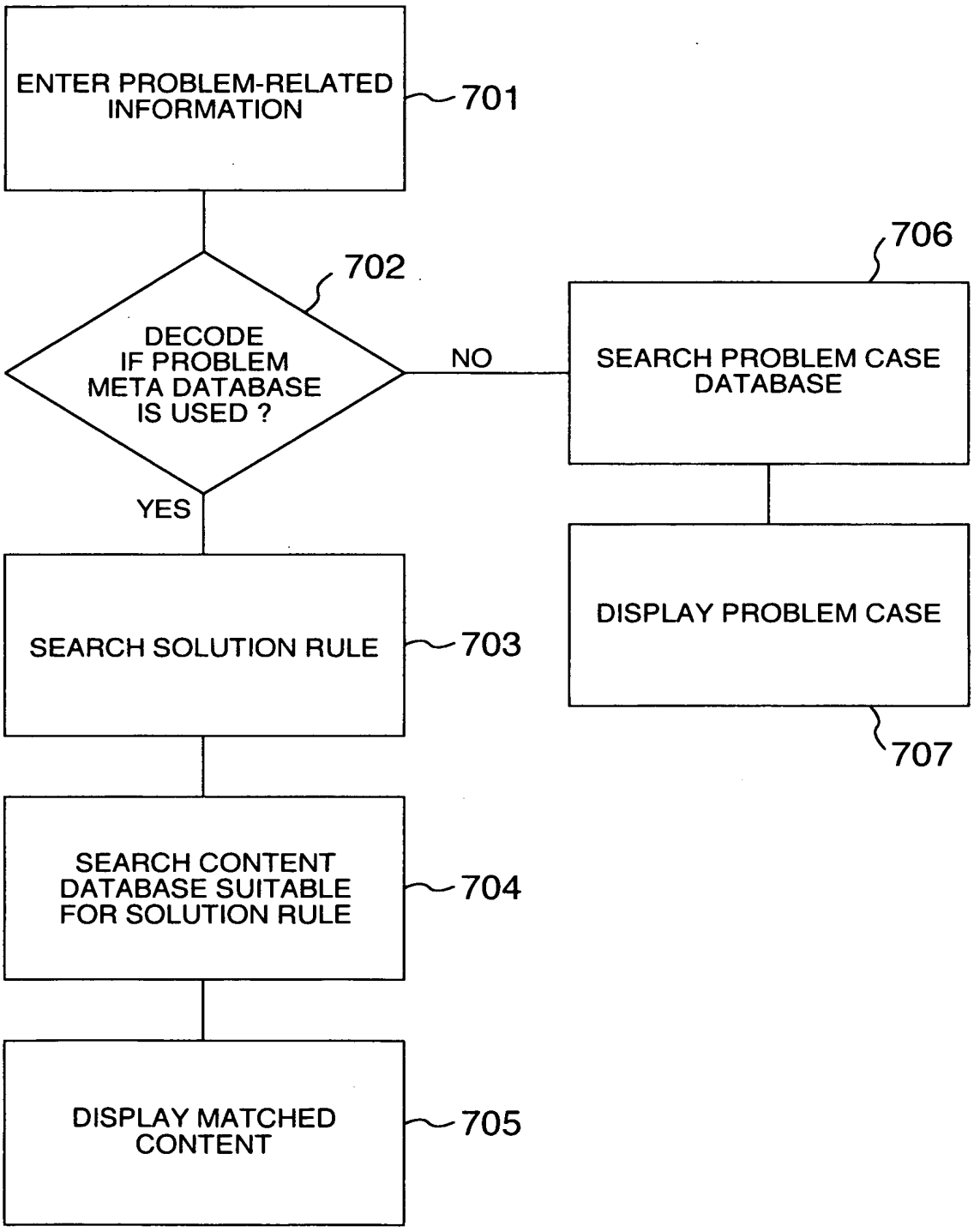

ENTER PROBLEM-RELATED INFORMATION
701
DECODE IF PROBLEM META DATABASE IS USED ?
702
NO
YES
SEARCH PROBLEM CASE DATABASE
706
DISPLAY PROBLEM CASE
707
SEARCH SOLUTION RULE
703
SEARCH CONTENT DATABASE SUITABLE FOR SOLUTION RULE
704
DISPLAY MATCHED CONTENT
705

FIG. 10

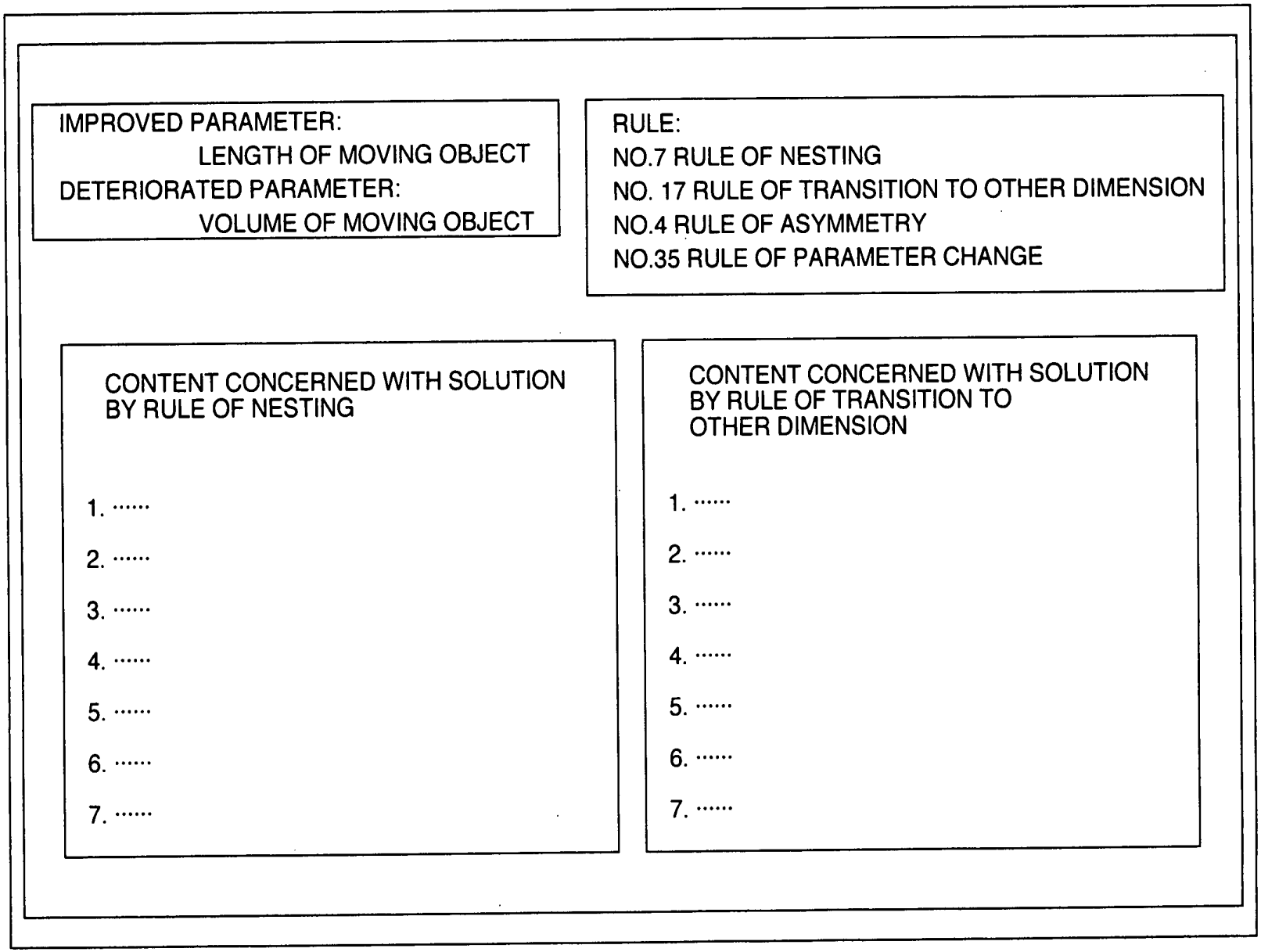

IMPROVED PARAMETER:
LENGTH OF MOVING OBJECT
DETERIORATED PARAMETER:
VOLUME OF MOVING OBJECT
RULE:
NO.7 RULE OF NESTING
NO. 17 RULE OF TRANSITION TO OTHER DIMENSION
NO.4 RULE OF ASYMMETRY
NO.35 RULE OF PARAMETER CHANGE
CONTENT CONCERNED WITH SOLUTION BY RULE OF NESTING
1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
CONTENT CONCERNED WITH SOLUTION BY RULE OF TRANSITION TO OTHER DIMENSION
1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....

FIG. 11

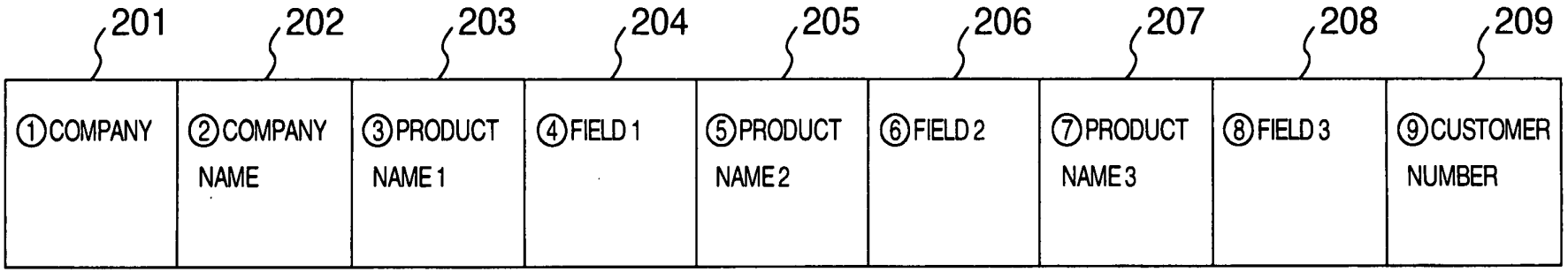


FIG. 12

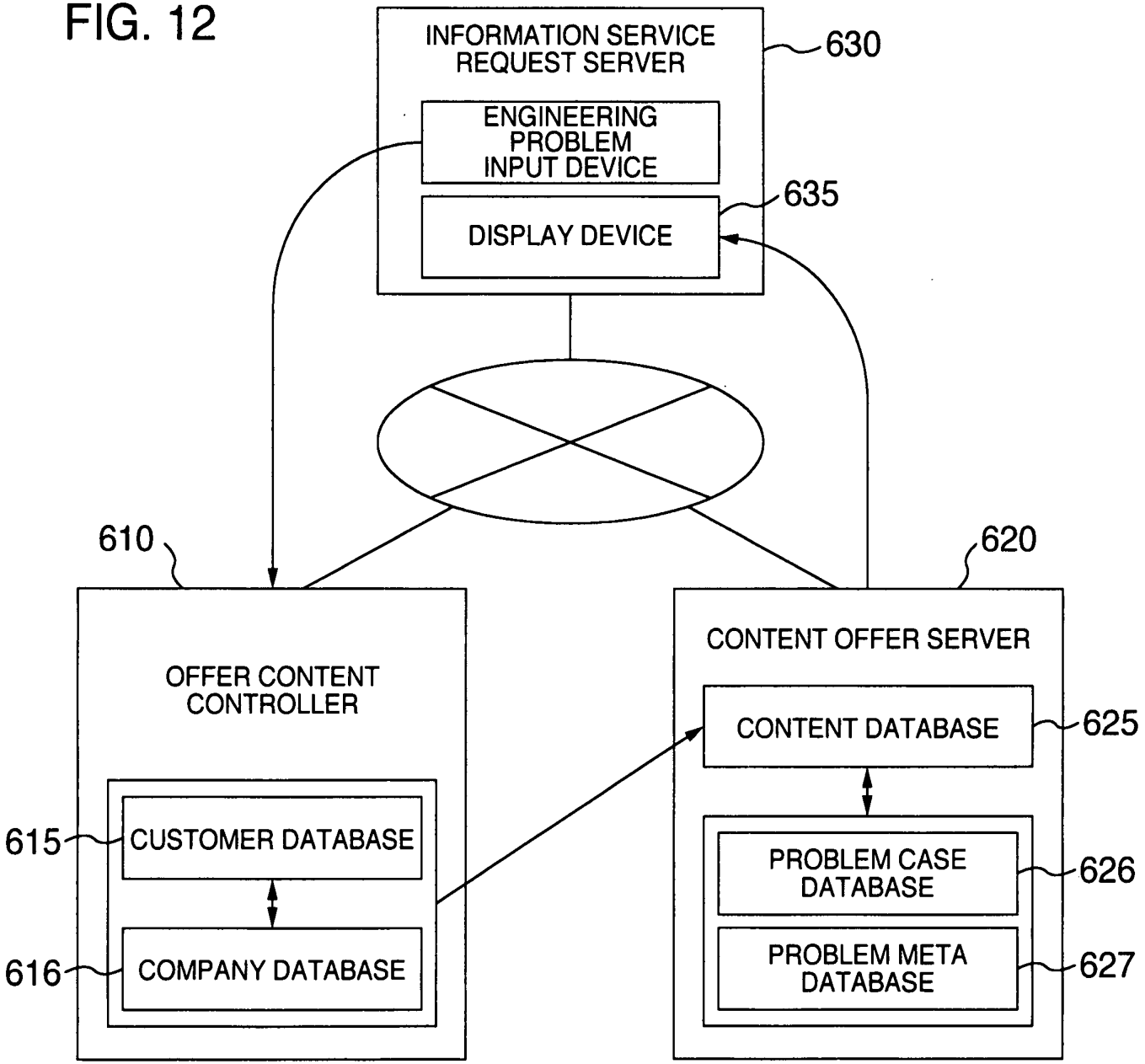


FIG. 13

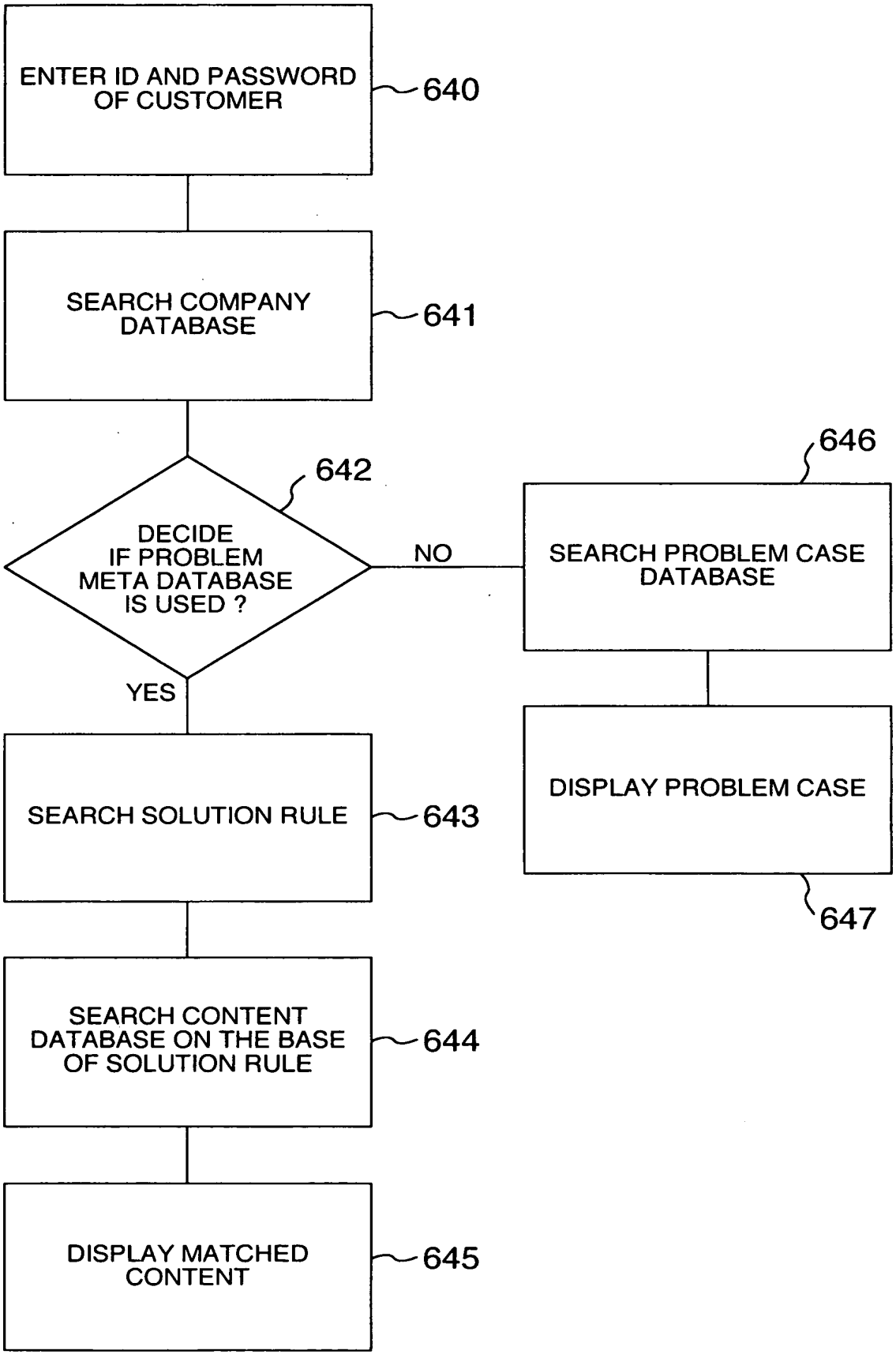

ENTER ID AND PASSWORD OF CUSTOMER
640
SEARCH COMPANY DATABASE
641
642
DECIDE IF PROBLEM META DATABASE IS USED ?
NO
646
SEARCH PROBLEM CASE DATABASE
YES
DISPLAY PROBLEM CASE
647
SEARCH SOLUTION RULE
643
SEARCH CONTENT DATABASE ON THE BASE OF SOLUTION RULE
644
DISPLAY MATCHED CONTENT
645

FIG. 14

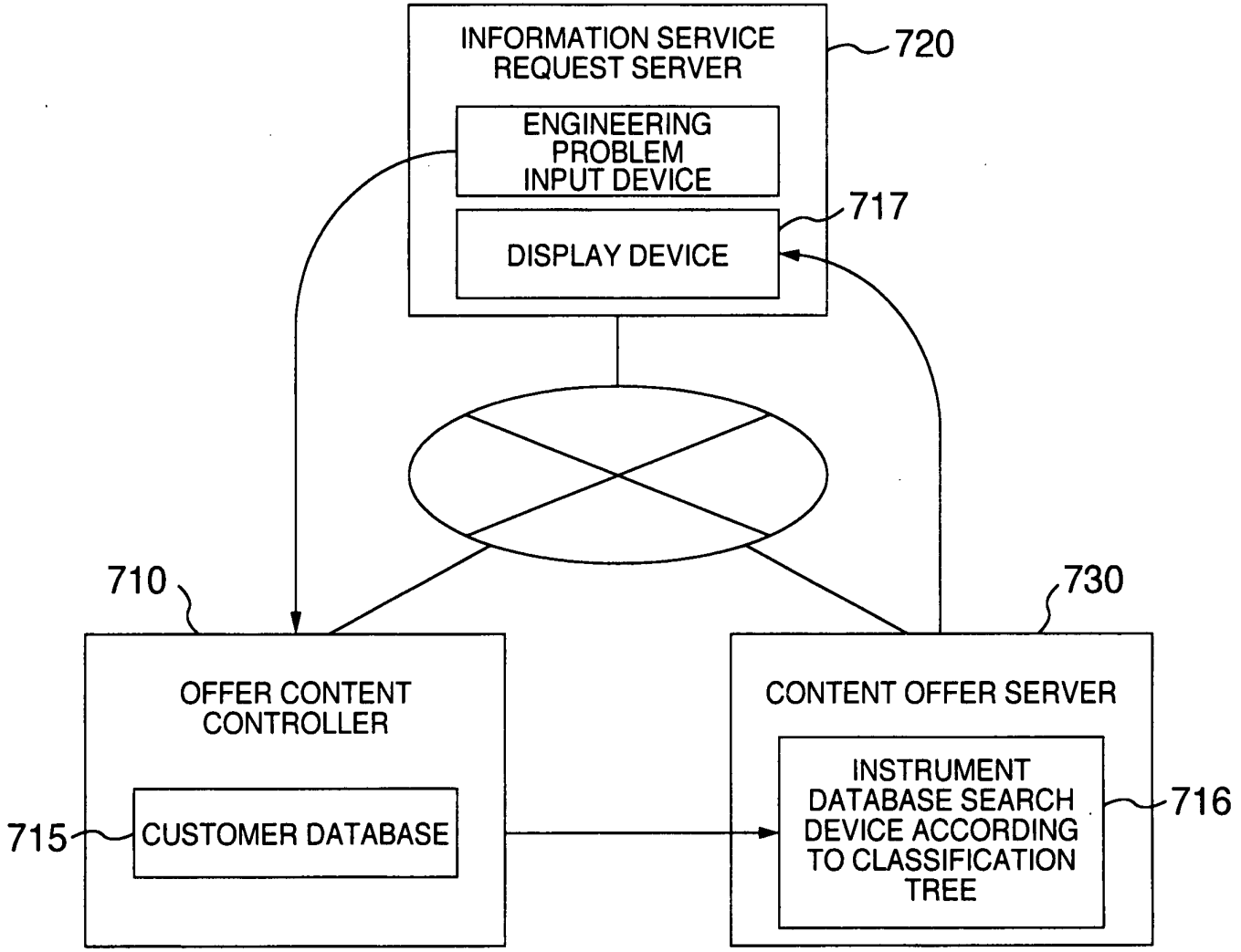

INFORMATION SERVICE REQUEST SERVER
720
ENGINEERING PROBLEM INPUT DEVICE
717
DISPLAY DEVICE
710
730
OFFER CONTENT CONTROLLER
CONTENT OFFER SERVER
715
CUSTOMER DATABASE
INSTRUMENT DATABASE SEARCH DEVICE ACCORDING TO CLASSIFICATION TREE
716

FIG. 15

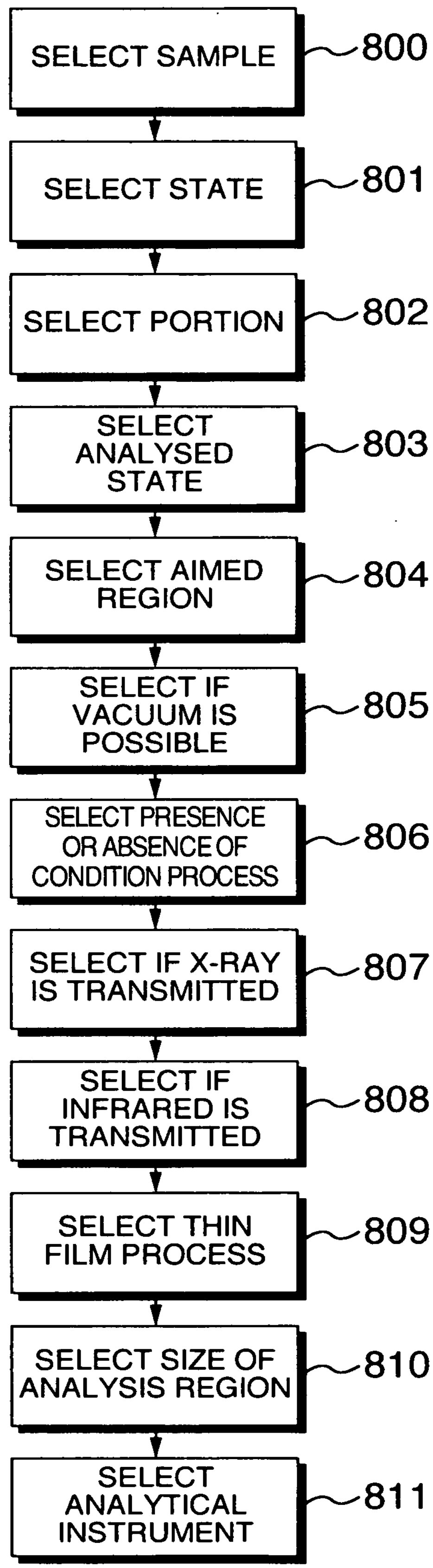

SELECT SAMPLE
800
SELECT STATE
801
SELECT PORTION
802
SELECT ANALYSED STATE
803
SELECT AIMED REGION
804
SELECT IF VACUUM IS POSSIBLE
805
SELECT PRESENCE OR ABSENCE OF CONDITION PROCESS
806
SELECT IF X-RAY IS TRANSMITTED
807
SELECT IF INFRARED IS TRANSMITTED
808
SELECT THIN FILM PROCESS
809
SELECT SIZE OF ANALYSIS REGION
810
SELECT ANALYTICAL INSTRUMENT
811

FIG. 16

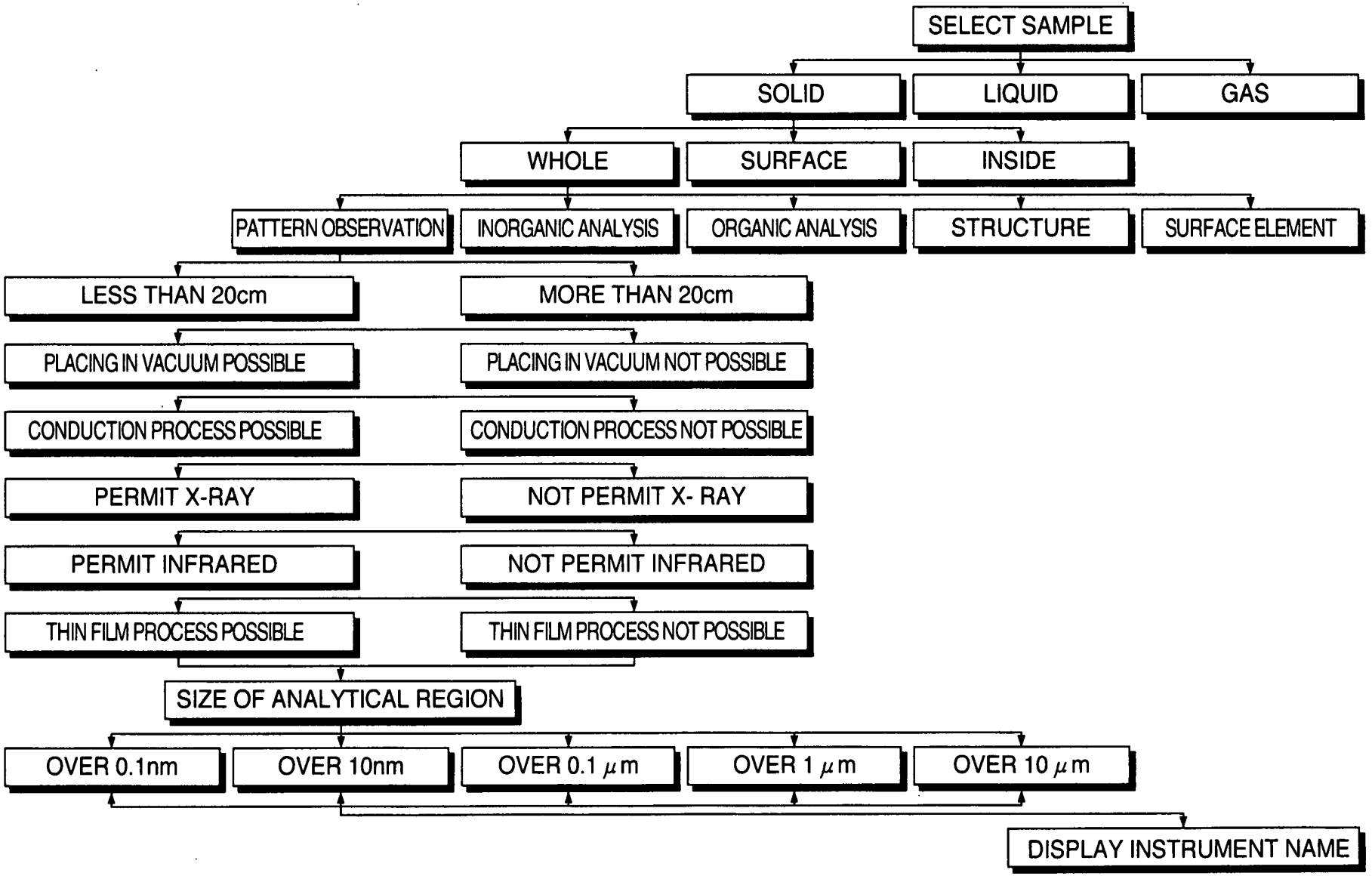

SELECT SAMPLE
SOLID
LIQUID
GAS
WHOLE
SURFACE
INSIDE
PATTERN OBSERVATION
INORGANIC ANALYSIS
ORGANIC ANALYSIS
STRUCTURE
SURFACE ELEMENT
LESS THAN 20cm
MORE THAN 20cm
PLACING IN VACUUM POSSIBLE
PLACING IN VACUUM NOT POSSIBLE
CONDUCTION PROCESS POSSIBLE
CONDUCTION PROCESS NOT POSSIBLE
PERMIT X-RAY
NOT PERMIT X- RAY
PERMIT INFRARED
NOT PERMIT INFRARED
THIN FILM PROCESS POSSIBLE
THIN FILM PROCESS NOT POSSIBLE
SIZE OF ANALYTICAL REGION
OVER 0.1nm
OVER 10nm
OVER 0.1 μm
OVER 1 μm
OVER 10 μm
DISPLAY INSTRUMENT NAME

FIG. 17

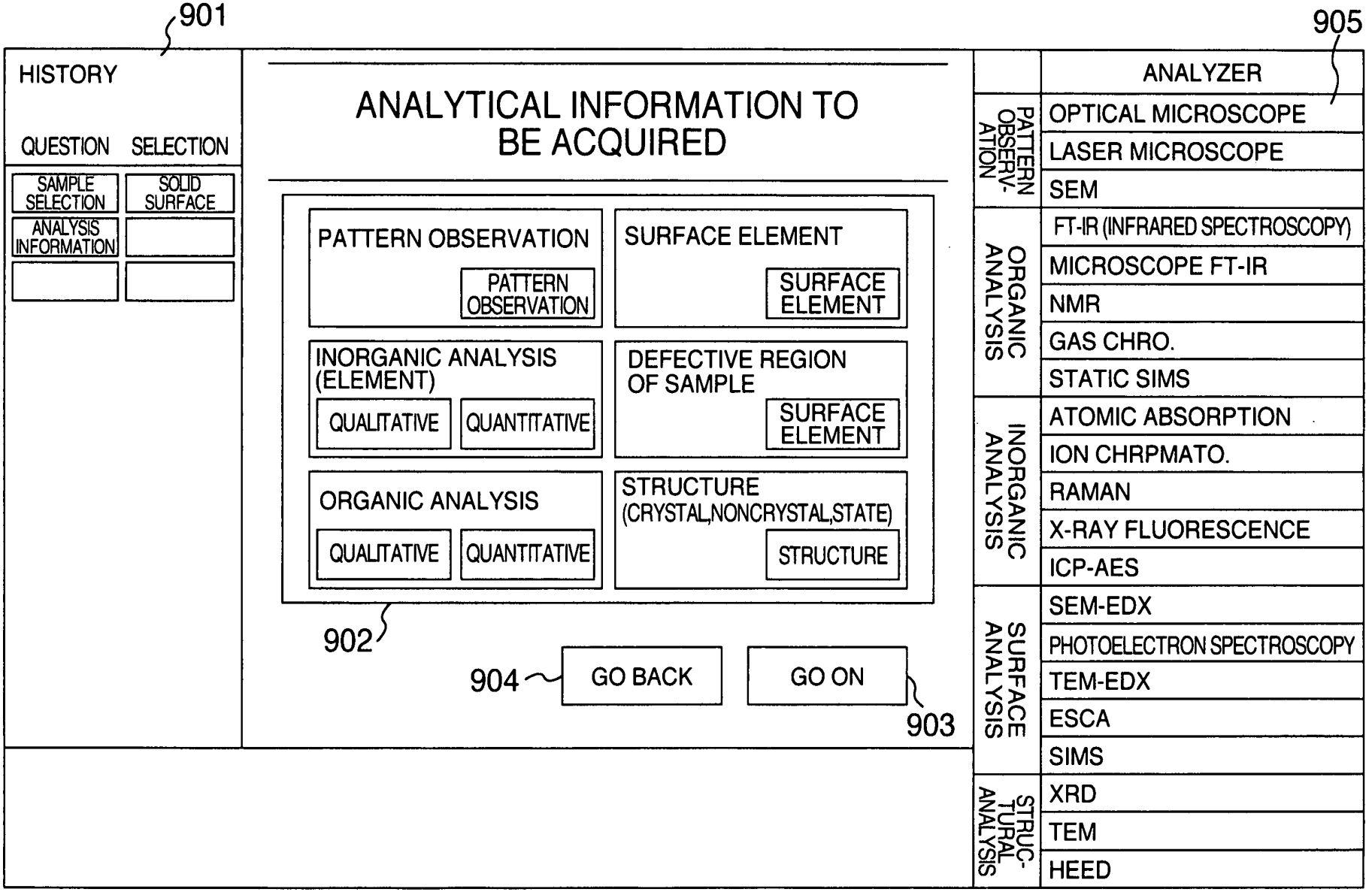


FIG. 18

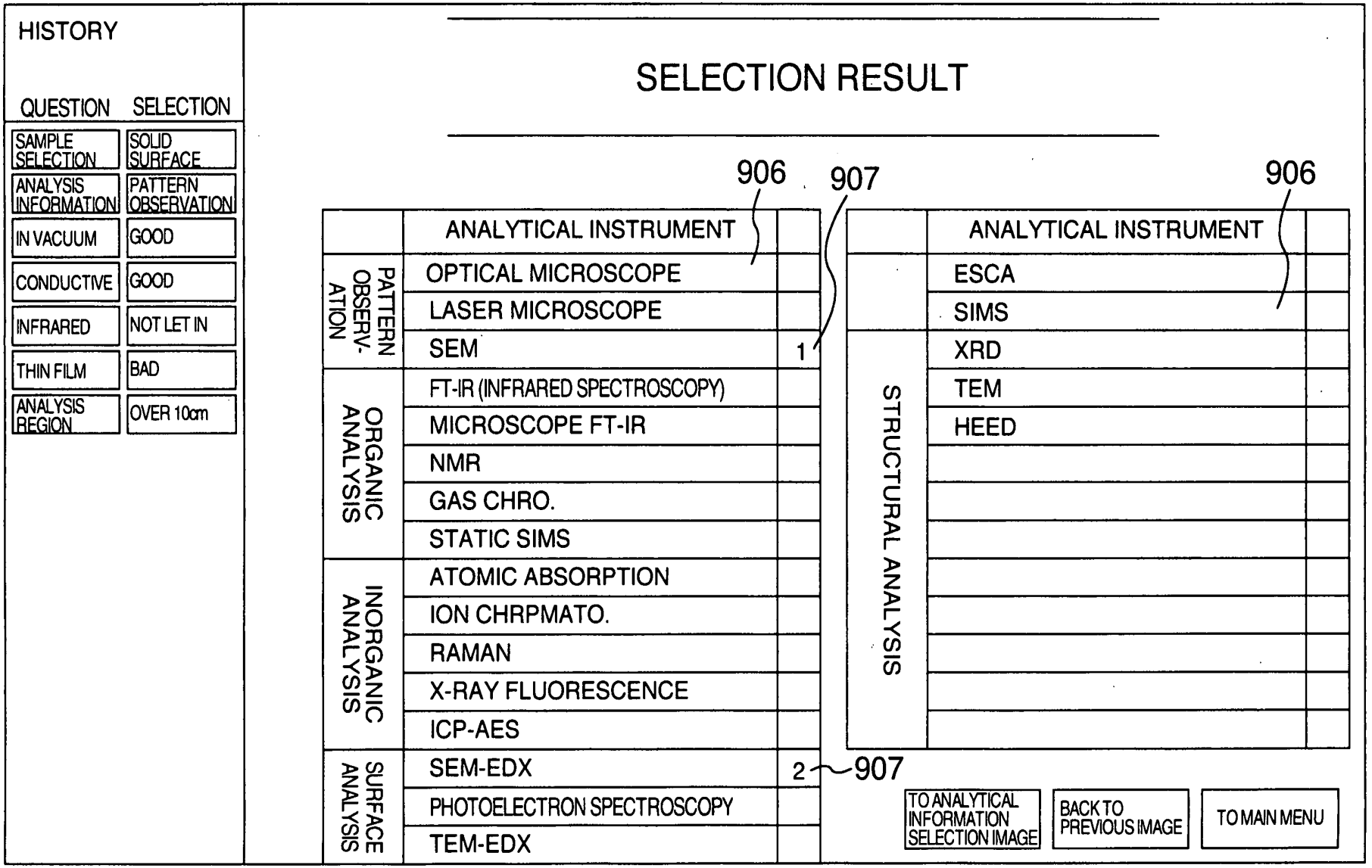

HISTORY
QUESTION
SELECTION
SAMPLE SELECTION
SOLID SURFACE
ANALYSIS INFORMATION
PATTERN OBSERVATION
IN VACUUM
GOOD
CONDUCTIVE
GOOD
INFRARED
NOT LET IN
THIN FILM
BAD
ANALYSIS REGION
OVER 10cm
SELECTION RESULT
906
907
906
ANALYTICAL INSTRUMENT
PATTERN OBSERV-ATION
OPTICAL MICROSCOPE
LASER MICROSCOPE
SEM
1
ORGANIC ANALYSIS
FT-IR (INFRARED SPECTROSCOPY)
MICROSCOPE FT-IR
NMR
GAS CHRO.
STATIC SIMS
INORGANIC ANALYSIS
ATOMIC ABSORPTION
ION CHRPMATO.
RAMAN
X-RAY FLUORESCENCE
ICP-AES
SURFACE ANALYSIS
SEM-EDX
2
907
PHOTOELECTRON SPECTROSCOPY
TEM-EDX
ANALYTICAL INSTRUMENT
ESCA
SIMS
STRUCTURAL ANALYSIS
XRD
TEM
HEED
TO ANALYTICAL INFORMATION SELECTION IMAGE
BACK TO PREVIOUS IMAGE
TO MAIN MENU

FIG. 19

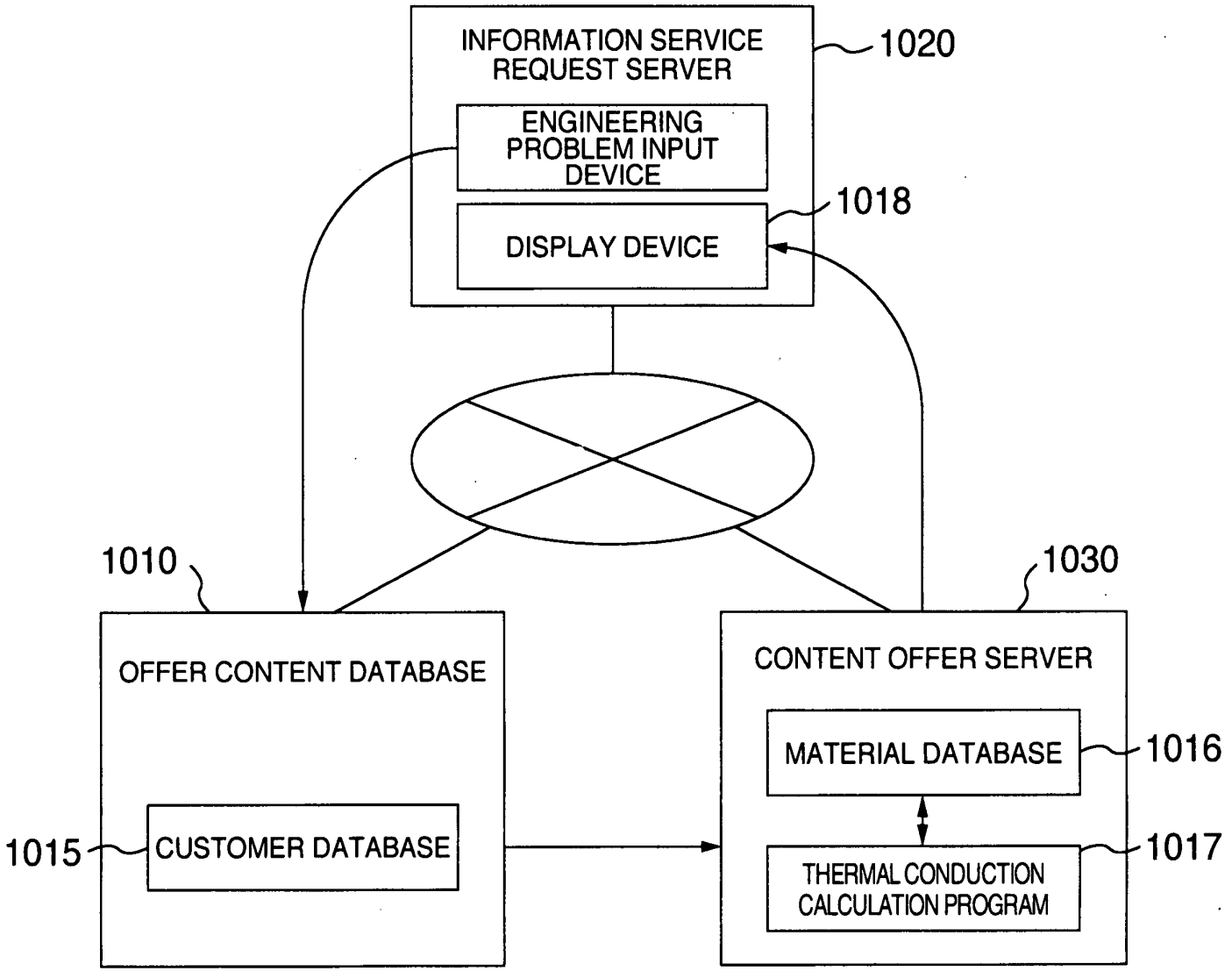
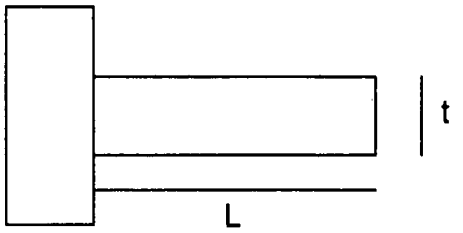

INFORMATION SERVICE REQUEST SERVER
1020
ENGINEERING PROBLEM INPUT DEVICE
DISPLAY DEVICE
1018
1010
OFFER CONTENT DATABASE
CUSTOMER DATABASE
1015
1030
CONTENT OFFER SERVER
MATERIAL DATABASE
1016
THERMAL CONDUCTION CALCULATION PROGRAM
1017

FIG. 20

THERMAL CONDUCTION ENGINEERING

ONE-DIMENSIONAL FIN CALCULATION

INPUT OF CALCULATION CONDITION



INPUT DATA	L[mm]:FIN LENGTH	300
	t[mm]:THICKNESS	2.0
	B[mm]:THICKNESS	1000.0
	Tb[°C]:FIN ROOT TEMP.	50.0
	Ts[°C]:AMBIENT TEMP.	20.0
	k[W/mk]:THERMAL CONDUCTIVITY	237.0
	k[W/m^{2}k]:THERMAL CONDUCTIVITY	100.0
	MATERIAL NAME	SS41

908

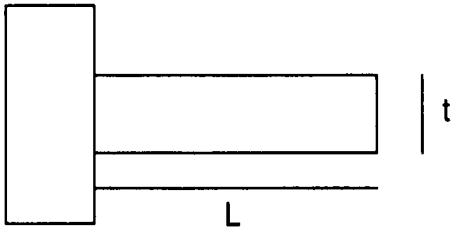
EXECUTE RESET

FIG. 21

THERMAL CONDUCTION ENGINEERING

ONE-DIMENSIONAL FIN CALCULATION

RESULT

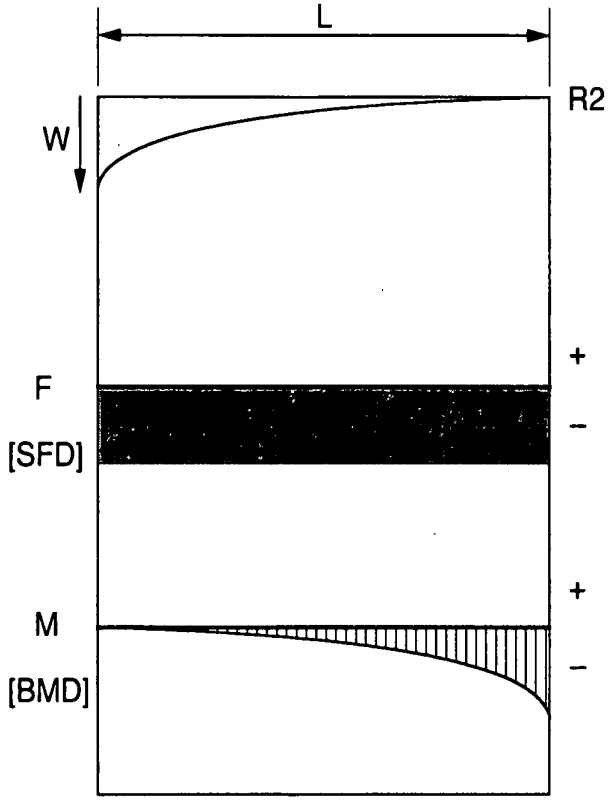


INPUT DATA	L[mm]:FIN LENGTH	300
	t[mm]:THICKNESS	2.0
	B[mm]:THICKNESS	1000.0
	Tb[°C]:FIN ROOT TEMP.	50.0
	Ts[°C]:AMBIENT TEMP.	20.0
	k[W/mk]:THERMAL CONDUCTIVITY	237.0
	k[W/m^{2}k]:THERMAL CONDUCTIVITY	100.0
	MATERIAL NAME	SS41

RESULT	AMOUNT OF HEAT CONDUCTION	160.501112
	FIN EFFICIENCY	0.883470

FIG. 22

CALCULATION OF FLEXURE, SHEARING STRESS, BENDING MOMENT OF SIMPLE BEAM



〈BEAM LENGTH〉
L[mm]=1000.0
〈LOAD〉
W[kgf]=20.0
〈YOUNG'S MODULUS〉
E[kgf/mm^2]=60000
〈GEOMETRICAL MOMENT OF INERTIA〉
I[mm^4]=50
〈CALCULATION POSITION〉
X[mm]=100
〈REACTION FORCE〉
R2[kgf]=20.0
〈FLEXURE〉
v[mm]=1.89
〈SHEARING STRESS〉
F[kgf]=−20.0
〈BENDING MOMENT〉
M[kgf*mm]=−2000.0

L:	1000.0	X:	100.0	factor:	1.0
W:	200	E:	60000.0	I :	50